

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

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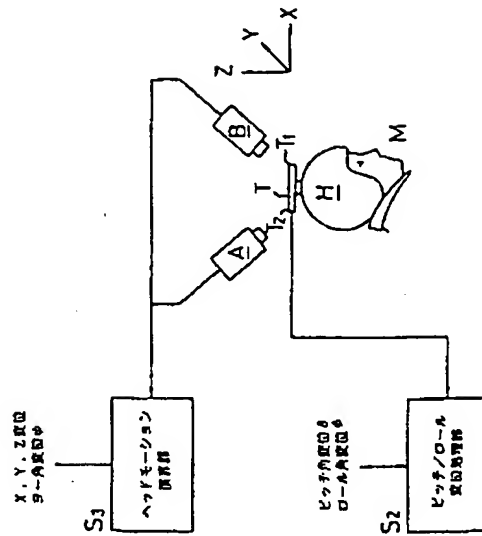
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TITLE : TARGET TRACKING SYSTEM



ABSTRACT : PURPOSE: To quickly detect the displacement of a target, and to realize high- speed and correct target tracking by detecting angular displacement around the prescribed axis of three dimensional axes by an angular displacement sensor.

CONSTITUTION: A helmet H is attached to the head part of the operator M of a manipulator, and the helmet H is provided with a rod-shaped target T extending toward the direction of X-axis, and detection points  $T_1$ ,  $T_2$  by an LED are arranged at both the ends of the target T, and each of the points  $T_1$ ,  $T_2$  is image-picked up by CCD cameras A, B. Then, three-dimensional coordinates varying together with time are computed by a head motion arithmetic part  $S_3$ , and X, Y, Z-displacements and yaw angular displacement are determined. On the other hand, a biaxial gimbal mechanism and angle sensors to detect the angular displacement around its axes are arranged in the target T, and the angular displacements around X-axis of a rolling axis and Y-axis of a pitching axis are detected, and pitching angular displacement and rolling angular displacement are detected at high speed from a pitch/roll displacement processing part  $S_2$ , and the high-speed and correct target tracking is executed on the basis of these detected results.

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